AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-24 (Canceled)

25. (Currently amended) An infusion control device for controlling infusion of a liquid in an extracorporeal blood circuit, comprising:

an arterial pipe connected to an inlet of a blood compartment of a filter, the arterial pipe being also connected to a pre-dilution pipe of an infusion circuit;

a venous pipe connected to an outlet of the blood compartment, the venous pipe being also connected to a post-dilution pipe of said infusion circuit; and

a control unit configured to control the distribution of an infusion flow rate in said arterial and venous pipes based on a monitoring of at least one quantity correlated with the operating conditions of the filter; wherein said quantity comprises a transmembrane pressure value; and ~~Device according to claim 24,~~ wherein said trans-membrane pressure value includes a mean trans-membrane value:

$TMP_{ave} = [TMP_i - TMP_o] / 2$

calculated from four pressures measured at the inlet and outlet of the blood compartment and at the inlet and outlet of a dialysis liquid compartment of the filter, wherein, TMP_i is the inlet transmembrane pressure value, which is equal to the difference between the pressure value at the inlet of the blood compartment and the pressure value at the outlet of the dialysis liquid compartment, and TMP_o is the outlet transmembrane pressure value, which is equal to the difference between the pressure

value at the outlet of the blood compartment and the pressure value at the inlet of the dialysis liquid compartment.

26. (Currently Amended) A device ~~Device~~ according to claim 25, further comprising:

means for measuring the blood pressure values at the inlet and at the outlet of the blood compartment of the filter;

means for measuring the dialysis liquid pressure values at the inlet and at the outlet of the dialysis liquid compartment of the filter;

means for calculating an inlet transmembrane pressure value as the difference between the pressure value at the inlet of the blood compartment and the pressure value at the outlet of the dialysis liquid compartment and an outlet transmembrane pressure value as the difference between the pressure value at the outlet of the blood compartment and the pressure value at the inlet of the dialysis liquid compartment; and

means for calculating mean transmembrane pressure value equal to $(TMP_i\text{-}TMP_o)$ /2.

27. (Currently amended) An infusion control device for controlling infusion of a liquid in an extracorporeal blood circuit, comprising:

an arterial pipe connected to an inlet of a blood compartment of a filter, the arterial pipe being also connected to a pre-dilution pipe of an infusion circuit;

a venous pipe connected to an outlet of the blood compartment, the venous pipe being also connected to a post-dilution pipe of said infusion circuit; and

a control unit configured to control the distribution of an infusion flow rate in said arterial and venous pipes based on a monitoring of at least one quantity correlated with the operating conditions of the filter; ~~Device according to claim 22,~~ wherein said quantity comprises a quantity correlated with the concentration of the blood.

28. (Currently amended) An infusion control device for controlling infusion of a liquid in an extracorporeal blood circuit, comprising:

an arterial pipe connected to an inlet of a blood compartment of a filter, the arterial pipe being also connected to a pre-dilution pipe of an infusion circuit;

a venous pipe connected to an outlet of the blood compartment, the venous pipe being also connected to a post-dilution pipe of said infusion circuit; and

a control unit configured to control the distribution of an infusion flow rate in said arterial and venous pipes based on a monitoring of at least one quantity correlated with the operating conditions of the filter; ~~Device according to claim 22,~~ wherein said quantity comprises a filtration factor determined on the basis of:

$$FF = UFR/Q_p = UFR/[Q_b \bullet (1-Hct)]$$

in which UFR is the ultrafiltration flow rate, Q_p is the plasma flow, Q_b is the blood flow, and Hct is the hematocrit.

29. (Currently Amended) A device ~~Device~~ according to claim 28, further comprising:

means for determining an ultrafiltration flow rate of plasma water through the membrane of the filter;

means for determining the hematocrit at the inlet of the filter, and

means for calculating a filtration factor equal to UFR/[Q_b (1-Hct)].

30. (Currently Amended) A device ~~Device~~ according to claim 29, wherein the means for determining the hematocrit comprise means for determining the hemoglobin concentration at the inlet of the filter and means for dividing the hemoglobin concentration by a constant coefficient.

31. (Canceled)

32. (Currently Amended) An infusion control device for controlling infusion of a liquid in an extracorporeal blood circuit, comprising:

an arterial pipe connected to an inlet of a blood compartment of a filter, the arterial pipe being also connected to a pre-dilution pipe of an infusion circuit;

a venous pipe connected to an outlet of the blood compartment, the venous pipe being also connected to a post-dilution pipe of said infusion circuit; and

a control unit configured to control the distribution of an infusion flow rate in said arterial and venous pipes based on a monitoring of at least one quantity correlated with the operating conditions of the filter, wherein said quantity comprises an actual permeability of a membrane of the filter; and wherein said device ~~Device according to claim 31,~~ further ~~comprising~~ comprises:

means for determining an ultrafiltration flow rate of plasma water through the membrane of the filter; and

means for calculating an actual permeability equal to the ratio between the ultrafiltration flow rate and the mean transmembrane pressure value.

Claims 33-35 (Canceled)

36. (Currently amended) An infusion control device for controlling infusion of a liquid in an extracorporeal blood circuit, comprising:

an arterial pipe connected to an inlet of a blood compartment of a filter, the arterial pipe being also connected to a pre-dilution pipe of an infusion circuit;

a venous pipe connected to an outlet of the blood compartment, the venous pipe being also connected to a post-dilution pipe of said infusion circuit; and

a controller configured to regulate the distribution of the flow rates in said pre-dilution and post-dilution pipes from at least one quantity correlated with the concentration of the blood and/or with the filtration efficiency of the filter; ~~Device according to claim 33,~~ wherein said at least one quantity comprises at least one selected from the group including:

a filtration factor determined on the basis of:

$FF = UFR/Q_p = UFR/[\ Q_b \bullet (1\text{-}Hct)]$

in which UFR is the ultrafiltration flow rate, Q_p is the plasma flow, O_b is the blood flow and Hct is the hematocrit,

an actual permeability of a membrane of the filter,

a trans-membrane pressure of a membrane of the filter,

hematocrit,

hemoglobin,

blood viscosity,

blood electrical conductivity,

blood density, and

blood concentration.

37. (Currently amended) A device ~~Device~~ according to claim 36, further comprising:

means for measuring the blood pressure values at the inlet and at the outlet of the blood compartment of the filter;

means for measuring the dialysis liquid pressure values at the inlet and at the outlet of a dialysis liquid compartment of the filter;

means for calculating an inlet transmembrane pressure value as the difference between the pressure value TMP_i at the inlet of the blood compartment and the pressure value at the outlet of the dialysis liquid compartment, and an outlet transmembrane pressure value TMP_o as the difference between the pressure value at the outlet of the blood compartment and the pressure value at the inlet of the dialysis liquid compartment; and

means for calculating a transmembrane pressure value equal to $(TMP_i - TMP_o)/2$.

38. (Currently Amended) A device ~~Device~~ according to claim 36, further comprising:

means for determining an ultrafiltration flow rate of plasma water through the membrane of the filter;

means for determining the hematocrit at the inlet of the filter; and

means for calculating a filtration factor.

39. (Currently Amended) A device ~~Device~~ according to claim 38, wherein the means for determining the hematocrit comprises means for determining the hemoglobin

concentration at the inlet of the filter and means for dividing the hemoglobin concentration by a constant coefficient.

40. (Currently Amended) A device ~~Device~~ according to claim 36, further comprising:

means for determining an ultrafiltration flow rate of plasma water through the membrane of the filter; and

means for calculating an actual permeability equal to the ratio between the ultrafiltration flow rate and the mean transmembrane pressure value.

Claims 41-46 (Canceled)

47. (Currently Amended) A method for infusing a liquid in an extracorporeal blood circuit, the extracorporeal blood circuit having an arterial pipe connected to an inlet of a blood compartment of a filter and a venous pipe connected to an outlet of the blood compartment, the method comprising:

determining a distribution of an infusion flow rate of the liquid to infuse in the arterial pipe and in the venous pipe from at least one quantity correlated with the concentration of the blood and/or with a filtration efficiency of the filter; and

infusing the liquid in the arterial pipe and in the venous pipe in accordance with the determined distribution of the infusion flow rate; ~~Method according to claim 46,~~ wherein said quantity comprises at least one of:

a filtration factor determined on the basis of:

$FF = UFR/Q_p = UFR/[Qp \bullet (1\text{-}Hct)]$

in which UFR is the ultrafiltration flow rate, Q_p is the plasma flow, Q_b is the blood flow, and Hct is the hematocrit,

an actual permeability of a membrane of the filter, ~~and~~

a trans-membrane pressure of a membrane of the filter,

hematocrit,

hemoglobin,

blood viscosity,

blood electrical conductivity,

blood density, and

blood concentration.

Claims 48-59 (Canceled)